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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,534	07/25/2003	Yasuo Yoda	03500.017431.	1177
5514	7590	10/08/2004		EXAMINER
				LEE, PETER
			ART UNIT	PAPER NUMBER
			2852	

DATE MAILED: 10/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/626,534	YODA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Peter Lee	2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is **FINAL**.                                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-13 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-13 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 25 July 2003 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \*    c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>7/25/03</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

## **DETAILED ACTION**

### ***Drawings***

1. Figure 4 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. On page 1 line 10 of the application, it is acknowledged that Fig. 4 represents background art from which the invention is based; thus making it a prior art drawings. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

1. Claims 1 and 8 are objected to because of the following informalities:

In claim 1, change “[Nm<sup>2</sup>]” to “[N/m<sup>2</sup>]” in line 11 page 42.

In claim 8, change “[Ω]” to “[N/m<sup>2</sup>]” in line 2 of page 44.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4, 5, 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. (US pa 2001/0026709) in view of Hosoya et al. (US pn 6246845). As to claim 1, Hara teaches an image forming apparatus (abstract first sentence) comprising:

An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. image bearing member bearing an image); and a bias roll (Fig. 5 part 26) (ie. transfer member) contacting with the semiconductive belt (Fig. 5 part 24) in a contact portion (Fig. 5; the nip in between rollers 244 and 26); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer medium) in said contact portion by said bias roll, a Young's modulus of said semiconductive belt is taught to be greater than 500 MPa (page 3 paragraph [0037]; this teaching includes values that satisfy the limitation of the Young's modulus being in the range  $2 \times 10^8 [N/m^2]$  to  $9 \times 10^9 [N/m^2]$ ) (where  $1 \text{ Pa} = 1 [N/m^2]$ ).

As to claim 2, Hara teaches the use of a semiconductive belt to be used as the intermediate transfer belt, used to carry the image from the photosensitive body to be transferred onto a recording medium such as paper (page 4 paragraph [0054]) (ie. image bearing member is a belt).

As to claim 4, Hara teaches the use of a backup roll (Fig. 5 part 244) (ie. opposing member) that is positioned opposes to the bias roll (Fig. 5 part 26 (ie. transfer roll) with said belt interposed there between, and wherein said backup roll supports said belt (Fig. 5; apparatus arrangement has roll 244 positioned to aid in supporting the belt 24).

As to claim 5, Hara teaches the use of the semiconductive belt as an intermediate transfer member (page 4 paragraph [0054]), and the record medium being paper (page 12 paragraph [0189]) (ie. transfer medium is a transfer material).

As to claim 6, Hara teaches the semiconductive belt having a volume resistivity of  $10^7 \Omega$  to  $10^{13} \Omega$  (page 3 paragraph [0037]). These values fall within the range limitation given in claim 6 of  $10^8 \Omega$  to  $10^{15} \Omega$ .

Hara does not specifically teach, pertaining to claim 1, a contact pressure between the image bearing member and the transfer member being between  $4.0 \times 10^4 [N/m^2]$  and  $7.3 \times 10^4 [N/m^2]$ . It is Hosoya who teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2 part 24) being in contact with a pressure of between 500 to 10000  $g/cm^2$ . Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Kosoya into  $[N/m^2]$  by using the conversion ( $1 \text{ kg/cm}^2 = 1 [N/m^2]$ ), it is observed that the values taught by Hosoya are within the range limitation given in the claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resistivity values for the semiconductive belt when used in such an image forming apparatus. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

3. Claims 8, 9, 11, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al, in view of Hosoya et al.. As to claim 8, Hara teaches an image forming apparatus (abstract first sentence) comprising:

An endless semiconductive belt used as an intermediate transfer belt (page 4 paragraph [0054]) (ie. image bearing member bearing an image); and a bias roll (Fig. 5 part 26) (ie. transfer member) contacting with the semiconductive belt (Fig. 5 part 24) in a contact portion (Fig. 5; the nip in between rollers 244 and 26); wherein the image on said semiconductive belt is transferred to a paper (Fig. 5 part P) (ie. transfer material) in said contact portion by said bias roll, the surface resistivity of the semiconductive belt being between  $10^7 \Omega$  to  $10^{13} \Omega$  (page 3 paragraph [0037]) (this range taught by Hara is within the limitation of the claim 8).

As to claim 9, Hara teaches the use of a semiconductive belt to be used as the intermediate transfer belt, used to carry the image from the photosensitive body to be transferred onto a recording medium such as paper (page 4 paragraph [0054]) (ie. image bearing member is a belt).

As to claim 11, Hara teaches the use of a backup roll (Fig. 5 part 244) (ie. opposing member) that is positioned opposes to the bias roll (Fig. 5 part 26 (ie. transfer roll) with said belt interposed there between, and wherein said backup roll supports said belt (Fig. 5; apparatus arrangement has roll 244 positioned to aid in supporting the belt 24).

As to claim 12, Hara teaches the use of the semiconductive belt as an intermediate transfer member (page 4 paragraph [0054]), and the record medium being paper (page 12 paragraph [0189]) (ie. transfer medium is a transfer material).

Hara does not teach, pertaining to claim 8, a contact pressure between the image bearing member and the transfer member being between  $4.0 \times 10^4 [N/m^2]$  and  $7.3 \times 10^4 [N/m^2]$ . It is Hosoya who teaches having a pressure roller (Fig. 2 part 25) (ie. transfer member) and a backup roller (Fig. 2 part 24) being in contact with a pressure of between 500 to 10000  $g/cm^2$ . Because the backup roller 24 is located within the intermediate transfer medium (Fig. 2 part 23) (ie. image bearing member) that is responsible for transferring the image from the latent image carrier (Fig. 2 part 22), it is seen that in fact the intermediate transfer medium is in contact with the pressure roller. After converting the values taught by Kosoya into  $[N/m^2]$  by using the conversion ( $1 \text{ kg/cm}^2 = 1 [N/m^2]$ ), it is observed that the values taught by Hosoya are within the range limitation given in the claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize such a range of resistivity values for the semiconductive belt when used in such an image forming apparatus. One of ordinary skill in the art would have been motivated to do this because the range taught ensures a high level of transfer efficiency close to 100% (col. 7 lines 33-40).

4. Claims 3 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hara et al. in view of Hosoya et al., further in view of Sato (US pa 2001/0028815). As to claim 3, Hara in view of Hosoya teach all of the limitations pertaining to the parent claims 1 and 2 as outlined above. Hara in view of Hosoya does not teach the image bearing belt being constructed in a single layer. It is Sato who teaches in his reference the use of a photosensitive belt (page 1 paragraph [0012]) (ie. image bearing member) being of a single layer, in the use of a color image forming apparatus. It would have been obvious to a person of ordinary skill in the art at the time

the invention was made to utilize a single layer photosensitive belt as opposed to other embodiments of the belt when constructing an image forming apparatus. A person of ordinary skill in the art would have been motivated to use the single layer construction because it offers the advantages of good color quality by preventing print fog or halation (page 1 paragraph [0010]).

As to claim 10, Hara in view of Hosoya teach all of the limitations pertaining to the parent claims 8 and 9 as outlined above. Hara in view of Hosoya does not teach the image bearing belt being constructed in a single layer. It is Sato who teaches in his reference the use of a photosensitive belt (page 1 paragraph [0012]) (ie. image bearing member) being of a single layer, in the use of a color image forming apparatus. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize a single layer photosensitive belt as opposed to other embodiments of the belt when constructing an image forming apparatus. A person of ordinary skill in the art would have been motivated to use the single layer construction because it offers the advantages of good color quality by preventing print fog or halation (page 1 paragraph [0010]).

5. Claims 1 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rimai et al. (US pn 5807651) in view of Watanabe et al. (US pg pub 2002/0164177). As to claim 1, Rimai teaches an electrostatographic apparatus (title) (ie. image forming apparatus) comprising:

A photoconductive primary image member (Fig 1 part 1)(ie. image bearing member bearing an image); and an intermediate transfer drum (Fig. 1 part 2) (ie. transfer member) contacting with the photoconductive primary image member in a contact portion (Fig. 1; the

contact nip seen in between parts 1 and 2); wherein the image on said photoconductive primary image member is transferred to the intermediate transfer drum at the said contact portion (col. 5 lines 43-47) and then the image is further transferred to a receiving sheet at a transfer station (Fig. 1 part 25), a Young's modulus of said photoconductive primary image member is taught to be greater than 10 GPa (col. 4 line 23; this teaching sufficiently satisfies the limitation of the Young's modulus being in the range  $2 \times 10^8 [N/m^2]$  to  $9 \times 10^9 [N/m^2]$ , where 1 Pa = 1 [ $N/m^2$ ]).

As to claim 7, Rimai teaches the image bearing member being of photoconductive nature (col. 5 line 21-22), and the transfer medium being an intermediate transfer drum (col. 5 lines 53-57)

As to claim 1, Rimai does not teach the photoconductive primary image member being in contact with the intermediate transfer drum within a pressure range limitation of  $4.0 \times 10^4 [N/m^2]$  and  $7.3 \times 10^4 [N/m^2]$ . It is Watanabe who teaches having a photosensitive body being in contact with the intermediate transfer member at a contact pressure of 0.1 kg/cm to 20 kg/cm, which is within the limitation range given in claim 1. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the contact pressure in such a range when building such a image forming apparatus. A person of ordinary skill in the art would have been motivated to use a contact pressure of 0.1 kg/cm to 20 kg/cm to ensure good primary transfer between the photosensitive drum and the intermediate transfer member (page 3 paragraph [0059]).

6. Claims 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. (US pn 6253038) in view of Watanabe et al. (US pg pub 2002/01641177). As to claim 8 Ito teaches an image forming apparatus (abstract first sentence) comprising:

A photosensitive drum (Fig. 1 part 1) (ie. image bearing member bearing an image); and An intermediate transfer drum (Fig. 1 part 6) (ie. transfer member) contacting with the photosensitive drum (Fig. 1) in a contact portion (Fig. 1 reference N); wherein the image on said photosensitive drum is transferred to the intermediate transfer drum at nip N (Fig. 1) and then onto a transfer material such as paper at nip M (Fig. 1), the surface resistivity of the photosensitive drum being between  $10^{12} \Omega/cm$  to  $10^{15} \Omega/cm$  which is within the limitation of  $10^8 \Omega$  to  $10^{15} \Omega$  (col. 3 lines 16-17).

As to claim 13, Ito teaches the image bearing member being a photosensitive drum (col.2 line 58) and the transfer medium being a intermediate transfer drum (col. 2 line 61-63) (ie. intermediate transfer member).

As to claim 8, Ito does not teach the photoconductive primary image member being in contact with the intermediate transfer drum within a pressure range limitation of  $4.0 \times 10^4 [N/m^2]$  and  $7.3 \times 10^4 [N/m^2]$ . It is Watanabe who teaches having a photosensitive body being in contact with the intermediate transfer member at a contact pressure of  $0.1 \text{ kg/cm}$  to  $20 \text{ kg/cm}$ , which is within the limitation range given in claim 1. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the contact pressure in such a range when building such a image forming apparatus. A person of ordinary skill in the art would have been motivated to use a contact pressure of  $0.1 \text{ kg/cm}$  to  $20 \text{ kg/cm}$  to ensure good

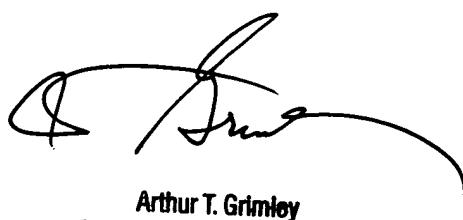
primary transfer between the photosensitive drum and the intermediate transfer member (page 3 paragraph [0059]).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Lee whose telephone number is 571-272-2846. The examiner can normally be reached on mon-fri 9:00 am-5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on 571-272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PL 9/24/04



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